From:	MCCLINCY Matt
To:	DeMaria, Eva
Subject:	FW: Follow-up on C10-C12 analysis - Gee I get to correct an RPM!
Date:	Tuesday, October 18, 2016 11:36:27 AM

Eva,

Just another early email chain fyi

From: POULSEN Mike
Sent: Monday, October 17, 2016 4:53 PM
To: MCCLINCY Matt
Subject: FW: Follow-up on C10-C12 analysis - Gee I get to correct an RPM!

From: POULSEN Mike
Sent: Friday, December 05, 2014 10:13 AM
To: 'Allen, Elizabeth'; Shephard, Burt; Muza, Richard; Koch, Kristine
Subject: RE: Follow-up on C10-C12 analysis - Gee I get to correct an RPM!

I think I agree with Burt's comments, but it would be best to run this by Henning Larsen and maybe Jennifer. Henning is on vacation, returning next Tuesday. I will forward this email.

The fractions we use in Oregon are:
Aliphatic C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, and >C21-C34
Aromatic >C8-C10, >C10-C12, >C12-C16, >C16-C21, and >C21-C34

As a reminder, we use equivalent carbons in Oregon guidance. The equivalent carbon number is related to the boiling point of a chemical normalized to the boiling point of the n-alkanes, or its retention time in a boiling point GC column. As an example, 1,2,3-trimethylbenzene (9 carbons) has an equivalent carbon number of 10.06. Using EC numbers is standard practice, but we have been using shorthand. It is better to say that we are talking about the >EC10-EC12 fraction. I hope I didn't just muddy the waters.

- Mike

From: Allen, Elizabeth [mailto:allen.elizabeth@epa.gov]
Sent: Thursday, December 04, 2014 3:58 PM
To: Shephard, Burt; Muza, Richard; Koch, Kristine
Cc: POULSEN Mike
Subject: RE: Follow-up on C10-C12 analysis - Gee I get to correct an RPM!

DEQ requires (recommends) use of a fractionated TPH method. I can't remember what the specific fractions are, but hopefully Mike will chime in. Burt, my concern about #3 was that I suspected they wanted to use silica gel cleanup (I know the consultant that sent the email). By definition, branched- and cyclo-alkanes are aliphatic.

E

From: Shephard, Burt
Sent: Thursday, December 04, 2014 3:24 PM

To: Muza, Richard; Koch, Kristine
Cc: Allen, Elizabeth; poulsen.mike@deq.state.or.us
Subject: RE: Follow-up on C10-C12 analysis - Gee I get to correct an RPM!

Rich,

I don't know of a C10-C12 specific analytical method either. I suppose if someone really wanted to put in the time, a capillary column gas chromatography method could be developed where someone could pick off all of the individual compounds within the C10-C12 range, or maybe a range of retention times on the GC column would work. I always liked the way the state of Alaska defined their TPH fractions, based on their state approved analytical methods for gasoline range, diesel range and residual range organics. But Alaska didn't split out aliphatics from aromatics, which is of both toxicological, and fate and transport interest.

Best regards,

Burt Shephard
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Telephone: (206) 553-6359
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e-mail: Shephard.Burt@epa.gov

"Facts are stubborn things"
- John Adams

From: Muza, Richard
Sent: Thursday, December 04, 2014 3:00 PM
To: Shephard, Burt; Koch, Kristine
Cc: Allen, Elizabeth; poulsen.mike@deq.state.or.us
Subject: RE: Follow-up on C10-C12 analysis - Gee I get to correct an RPM!

Burt

Hi. Thanks for the elaboration. One other question that came up on Monday was regarding lab analytical methods. Henning Larsen of DEQ mentioned that he had not seen a method that covered the entire C10-12 range and the consultants for PEO also raised some questions on the issue. Any feedback on lab methods?

THANKS!

Rich

Rich Muza
Remedial Project Manager
U.S. EPA Region 10 Oregon Operations Office
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Portland, Oregon 97205
Phone: 503-326-6554
Fax: 503-326-3399

From: Shephard, Burt
Sent: Thursday, December 04, 2014 2:50 PM
To: Koch, Kristine; Muza, Richard
Cc: Allen, Elizabeth; poulsen.mike@deq.state.or.us
Subject: RE: Follow-up on C10-C12 analysis - Gee I get to correct an RPM!

Rich,

A couple of Kristine's responses aren't completely correct or don't cover a couple of nuances. Here are my responses amended to Kristine's. I've copied Mike Poulsen from ODEQ since he was involved with the ecological TPH benchmark derivation.

1 - confirming that C10 - C12 includes C10, C11, and C12 **Yes**
2 - confirming that it includes non-polar aliphatics only **No, it includes polar aliphatics, too. It also includes cycloalkanes as well as straight chain and branched alkanes. Also includes alkenes of all types.**
3 - confirming that it includes dissolved constituents only (the analysis process would include filtration of samples or centrifuging to eliminate sediment **No. Strictly speaking Kristine is correct, although the original data used to derive the water column benchmarks is likely the freely dissolved fraction, not a total TPH in water concentration. We also derived some sediment quality benchmarks for ecological risk that would be applicable to sediment. The sediment benchmarks are numerically different from the water column values, also have different concentration units. The water column TRVs were derived from laboratory toxicity tests where little if any suspended solids are present during the test. Colloidal TPH concentrations were rarely if ever analyzed.**

4 - what are the assumed receptors? **Ecological receptors** **All fully aquatic receptors only (fish, mussels, algae, etc.). They do not apply to terrestrial species (birds, mammals, herps, insects, etc.)**
5 - what is the compliance point for the receptors? **Pore water** **They are also applicable to surface water if you desire, but sediment pore water or transition zone water is the primary medium to which they are applied.**
6 - if the receptor is fish, is there a dilution factor from pore water to river water? **No**

Best regards,

Burt Shephard
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"Facts are stubborn things"
- John Adams

From: Koch, Kristine
Sent: Thursday, December 04, 2014 10:39 AM
To: Muza, Richard
Cc: Allen, Elizabeth; Shephard, Burt
Subject: RE: Follow-up on C10-C12 analysis

Below are answers to the questions.

Kristine Koch
Remedial Project Manager
USEPA, Office of Environmental Cleanup

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From: Muza, Richard
Sent: Thursday, December 04, 2014 10:26 AM
To: Koch, Kristine
Cc: Allen, Elizabeth; Shephard, Burt
Subject: FW: Follow-up on C10-C12 analysis

Kristine

Hi. On Monday afternoon I attended a meeting at DEQ NW to discuss cleanup options for residual TPH at the former Premier Edible Oils site located at the northern edge of the International Slip. This site has a TPH plume with limited (and stable) free product and downgradient Mn issues due to

changes in redox conditions as an after-effect of intrinsic biodegradation of the TPH. After some very good technical discussions on options for remediation of the higher concentrated areas of dissolved TPH and the potential effects of these options on limiting future Mn release into ground water, all talk turned to proposed PRGs for Portland Harbor.

I know that the LWG just submitted a revised white paper on the Mn calculations considering hardness and both Matt and I noted that to the consultants for PEO. Their greater line of questioning, however, came with regards to the proposed C10-12 PRG. The email below includes a list of questions on the porewater PRG for C10-12. These same questions will probably arise at other TPH facilities/sites at Portland Harbor when PRGs are final so it would be great to get answers sooner rather than later.

Who on the Portland Harbor team can address these questions? THANKS!

Rich

Rich Muza
Remedial Project Manager
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From: Tom Graf [mailto:tom@grafcon.us]
Sent: Thursday, December 04, 2014 10:07 AM
To: harman.charles@deq.state.or.us; MCCLINCY Matt; Muza, Richard; LARSEN.Henning@deq.state.or.us
Cc: P Hubbard; Tom Graf
Subject: Follow-up on C10-C12 analysis

All - this email follows up on our discussion Monday regarding analysis of groundwater samples for C10-C12 compliance. Based on your response to these questions, we will propose a sampling methodology for your review.

1 - confirming that C10 - C12 includes C10, C11, and C12 **Yes**
2 - confirming that it includes non-polar aliphatics only **No, it includes polar aliphatics, too.**
3 - confirming that it includes dissolved constituents only (the analysis process would include filtration of samples or centrifuging to eliminate sediment **No.**

4 - what are the assumed receptors? **Ecological receptors**
5 - what is the compliance point for the receptors? **Pore water**
6 - if the receptor is fish, is there a dilution factor from pore water to river water? **No**

Please feel free to add items that should be considered in developing the analysis protocols.

Regards,
Tom

--
Tom Graf
GrafCon

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